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ABSTRACT

Although U.S. industry has been reengineered to be the best in the world, companies today have a difficult time finding the skilled workers in order to stay competitive in the global economy. This reality has finally reached the educational community; schools are raising the bar, more students are taking advanced course work, and test scores are improving. In order to continue this improvement and create the work force needed for the future, parents, educators, and business leaders must work together to bridge the gap between school and the workplace. Critical components of educational reform include installing world-class standards, assessing student performance, accountability, and making education relevant. One school district, Community Consolidated School District 21 in Wheeling, Illinois, has embarked on a 3-year initiative, called "Learning . . . To Work," designed to expose middle school students and their teachers to an education rich in both rigorous academic and practical work-related experiences. The program provides opportunities for students to: (1) explore career options through in-class activities and business-sponsored lessons in the workplace; (2) learn the skills and knowledge they will need to excel in the next century; and (3) cultivate an early respect for academic excellence and develop the self-confidence to master more advanced skills in high school. The program also offers teachers work-based learning experiences and continuing relationships with business partners so that they can relate the workplace to their students. (KC)

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Community Consolidated School District 21
Wheeling, Illinois
First in the World Consortium

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Preparing Young People for Tomorrow's Workplace

NATIONAL ALLIANCE OF BUSINESS

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School and the Workplace: A Growing Chasm

The story is by now all too familiar. Employers are begging for skilled workers, yet can't find qualified people: NYNEX screens 57,000 applicants to find 2,100 qualified for entry-level technical jobs. Mead Corporation in Michigan examines over 1,500 applicants just to find 30 meeting their entrance requirements.[1] The Information Technology Association of America announces that there are over 190,000 information technology jobs vacancies due to a shortage of trained personnel. Microsoft reports that its Solution Providers partners rank the skills gap as their number one business challenge.[2] These are certainly not isolated examples. In 1995, one in three corporate economists surveyed reported that their firms were having problems finding skilled employees.[3] Today, that number has jumped to 58 percent.[4]

Employers are having no more success with current employees. The American Management Association finds that the number of businesses providing remedial education leaped from 4 percent to 20 percent in five years. *Training* magazine found that in 1995, 43 percent of companies surveyed offered basic skills course work. Louis Gerstner, CEO of IBM, estimates that poor schooling costs the economy nearly sixty billion dollars each year: thirty billion dollars in remedial education and thirty billion dollars in lost productivity.[5]

Staggering Changes Overtake The Workplace

Why do so many American workers lack the skills necessary to succeed? The answer lies not in individuals as much as in the staggering changes that have overtaken the workplace in the last 20 years. Art Johnson, a human resource director at Ford Motor Company and an industry veteran recalls what it used to be like:

> If we had a vacancy, we would look outside in the plant waiting room to see if there were any warm bodies standing there. If someone was there and they looked physically okay and they weren't an obvious alcoholic, they were hired.[6]

By the mid 1980's, all that had changed. American industry was in a fight for its life, and it didn't need warm bodies anymore, but thinking minds.

Global competition fed by advanced manufacturing techniques, superior quality and lower costs, pushed many American businesses against the ropes, even knocking out entire industries. Corporations that had dominated world markets since World War II found themselves losing market share around the world as well as here at home. Critics spoke of the inevitable decline of American economic power.

Then American companies began focusing on results, benchmarked their performance against the best in the world, and redesigned work processes to reach those standards. Today, America is again the world leader in virtually every critical industry, and many companies that had been declared at death's door are today vibrant world competitors.

But the marketplace is very unforgiving. Yesterday's winners are tomorrow's losers, unless they continue to deliver higher quality products and services to a global market more quickly and at a lower cost than competitors can.

Radically Altering the American Workforce

The impact of technology and global competition on the American workforce has been profound as some jobs disappeared while others changed dramatically. Secretaries used to type; today they word process, create spreadsheets, and maintain data banks. Architects, engineers and drafters once designed with ink on paper; today they create using CAD and CAM software programs. Many workers on assembly lines once used hand tools; now they have to understand statistical control and robotics.

Business quickly discovered a need for a new kind of worker, one able to analyze and solve problems, make decisions, and work effectively with people from diverse cultural and professional backgrounds. The marketplace cried out for people who could read and then act on technical information derived from graphs, charts, and manuals, and clearly communicate such information to others both verbally and in writing.

Indeed, people with such skills have found unparalleled opportunities and financial success over the past decade and a half. In 1979, for instance, the average male college graduate earned about $45,973 a year (adjusted for inflation); in 1995, that graduate earned $48,154.

Workers without marketable skills, on the other hand, have found it increasingly more difficult to make ends meet. The percentage of unskilled jobs shrank from 60 percent in 1950 to about 33 percent today. By 2005, that figure is expected to drop to less than 15 percent. The impact on the pocketbook has been no less dramatic. As late as 1979, a male high school graduate earned on average $36,640 a year (again adjusted for inflation), while in 1995 that same graduate made only $28,813. A man without a high school diploma earned even less: $28,942 in 1979 and $20,499 in 1995.[7]

Raising The Education Bar

Educators are sometimes puzzled when schools are criticized for not providing students with essential skills. By many indicators, school performance has improved over the last two decades; and yet many schools have not kept pace with the demands of a rapidly changing world. Often, educators do not have sufficient information about today's world of work. As a result, many students are graduating without the skills and knowledge they need to be successful.

This skills deficiency is not confined to non-college bound students. Ninety percent of post secondary institutions offer remedial course work. In 1994, one-third of the first year students took remedial math and one-fourth took remedial English. In California, 60 percent of students entering its state collegiate system require remedial education.[8] In Maryland, 50 percent do.

Recent TIMSS (Third International Math and Science Study) results reveal how poorly we are doing in these two critical subject areas. In comparison to their peers in 40 other nations, U.S. eighth graders

ranked 28th in math and 17th in science. Virtually every one of our trading partners ranked well ahead of us in both disciplines."

Still Schools Are Better Than Thought

Many look at these data and conclude that school performance is declining. By many measures, however, American education is far better than ever before. It is certainly serving far more people. In 1912, about 15 percent of young people graduated from high school, and college was reserved largely for the elite. On the eve of World War II, the average person completed only nine years of education and 12 percent completed fewer than five years. Between 10-20 percent of teenagers in most southern communities attended school. Large numbers of students in New York City – mostly immigrants and minorities – were labeled "subnormal."[12] As late as 1960, only 40 percent of students graduated from high school and 8 percent went on to college. Today, the picture is much different. About 75 percent of students receive high school diplomas – nearly double the proportion in other industrialized nations.[13] Two-thirds of those students go on to spend some time in post secondary schooling with about 15 percent earning baccalaureates.

In terms of subject matter, most research shows that student performance has remained remarkably stable over the past 70 years, though schools have opened their doors to a much larger percentage of young people. One study compared data on 17-year olds in 1917, 1933, 1944, 1967 and 1987 in terms of basic information and found little change.[14] The researcher concluded: "Students today appear to be as well educated as previously educated students."[15]

Although SAT scores are often cited as examples of declining student performance, a closer examination reveals that it is not that simple. To be sure, there has been about a 3.3 percent decline in mean SAT raw scores since the mid 1960's, mostly occurring between 1965 and 1975. What is often overlooked, however, is that there has also been a large increase in the number of students in the bottom 60 percent of the graduating class opting to take the test. Minorities, systematically denied equal opportunities in the past, and young people living in rural areas who never dreamed of going on to college are now applying. Further, since the mid 1970's, the mean SAT score of every racial and ethnic group has increased: For Blacks, the increase is over 15 percent; for Asians, 6.75 percent; American Indians, 4.93 percent; Mexican-Americans, 7.78 percent; and Puerto Ricans, 7 percent.[16]

Closely related, the number of students taking advanced placement courses in high school has dramatically taken off. In 1978, 90,000 students took the AP tests; in 1990, that number had climbed 255 percent to 324,000 students. Even better, the number of Asians taking AP courses tripled, the percentage of African-Americans doubled and the percentage of Hispanics taking at least one AP class quadrupled.[17]

In line with these statistics, the proportion of students taking math and science courses also increased as the numbers below show.

Portion of High School Graduates Who Took[iv]					
	Algebra I	**Algebra II**	**Geometry**	**Biology**	**Chemistry**
1982	54%	32%	46%	76%	31%
1994	66%	59%	70%	94%	56%

Finally, the recently-released TIMSS survey for fourth grade students, shows impressive gains in elementary school math and science. In sharp contrast with eight grade results, only Korea outperformed us in science, although in mathematics, seven nations did better. As America's elementary science and math programs are aligned with the ideas and topics studied by most students around the world, being first in the world may be within reach.[v]

So the issue is not that schools haven't improved–clearly they have. The issue is that the demands of the workplace have far outstripped those gains. Technology, global competition and the redesign of the workplace are forcing the educational bar students must cross ever higher. It is unfair to expect schools to do it alone. Parents, community groups and business have to forge partnerships which ensure that:

- All young people have the education they need to choose careers and the quality of life they want for themselves, and not be forced into a series of dead-end jobs and a declining standard of living.
- Society has the educated citizenry it needs to grapple with the complex social, economic and political issues of the next century.
- Business has the educated workforce it needs to successfully compete in the global marketplace of tomorrow.

School District 21 Responds

In response to these hard realities, twenty Illinois school districts, including District 21, and their local business partners, have formed the *First In The World Consortium*. Its purpose is to redesign K-12 math and science curricula based on world-class standards, rigorous academic content with an emphasis on critical thinking, and a demonstrated in-depth understanding of scientific and mathematical principles. Business partners are helping to develop the curriculum, train teachers, and provide substantive on-the-job internships for both students and teachers.

Strengthening academics in high school, however, is not by itself sufficient. Instructional programs in elementary and middle school must also be upgraded. That is why District 21 Public Schools, along with

its local business partners and the National Alliance of Business, started the *Learning . . .To Work* project. In less than two years, it has made a remarkable contribution to the district's middle school program by:

- creating a learning environment that simulates the skills required in today's workplace;
- establishing a staff development program that provides actual workplace experience for teachers; and
- building and strengthening relationships between District 21 Public Schools and the business community that guarantees students' successful performance in the workplace.

Business partners offer teachers structured work-based learning experiences, advice on curricula, and tours of their facilities, in addition to volunteering in classrooms.

Middle school is an ideal age at which to expose students to the challenging world of work. Middle school students are at a critical learning transition point as they shift from acquiring basic skills to applying skills to more advanced concepts. Learning becomes exciting as students use their academic skills to solve "real world" challenges, and are motivated to excel academically. At the same time, students receive information about what it takes to succeed in the world of work and are encouraged to begin exploring options for future careers.

History is not kind to the idle. Unless public schools, in partnership with the business community, set world-class standards, develop rigorous courses of study, and assess performance against those standards, our children will fall behind those that do. It is really that simple.

Schools in a Changing America: Three Decades of Educational Reform

Reform is nothing new in American education. Throughout our history, schools have mirrored the social, political, and economic pressures that have shaped our culture. Over the past thirty years, schools have expanded and equalized educational opportunities for millions of children who had previously been denied access to quality education. Today, schools have the added imperative of preparing young people for a complex world, one driven by ever-changing technology and global competition.

Striving For Equal Opportunity

In the 1960's and 1970's, America turned its attention to social justice as poverty and racial discrimination dominated our domestic agenda. In response, schools struggled to end generations of legal and cultural segregation and to overcome the disadvantaged backgrounds of millions of poor children. Court-ordered desegregation resulted in redrawn school boundaries, students bussed to schools outside their neighborhoods, and the establishment of magnet schools with specialized programs and staff to attract a wide spectrum of students.

Schools also began a host of compensatory educational programs. Infant care, early childhood education, remedial language arts and math instruction, dropout prevention and counseling programs all tried to level the playing field and to promote equal opportunity for all students.

Spurred on by the civil rights movement, schools also took on the educational needs of children with disabilities. Traditionally, most disabled students had been placed in special schools or denied an education altogether. By 1983, over 4.5 million special education students were being mainstreamed or at least being taught in the same building with other students.

Without question, schools have made remarkable progress in expanding educational opportunities to millions of children. In 1910, fewer than 14 percent of adult Americans had graduated from high school compared with 81 percent in 1994. Today, one-fourth of the adults have completed four years of college, nearly double the proportion in other industrialized nations.

Schools And A New Kind of Worker

Beginning in the 1980's, however, more change swept across America and in turn American education. Virtually every industry underwent a fundamental change resulting from advancing technology and increased global competition. Employers quickly discovered that a highly skilled, trainable workforce could be their greatest competitive advantage. As they turned to public schools and to post secondary institutions, however they learned that:

- At least 23 million adults were functionally illiterate, including 13 percent of all 17 year olds and 40 percent of minorities.

- Colleges were establishing remedial course work as incoming first year students were ill-prepared to handle college level English and math.
- The private sector and the military were also spending millions of dollars on remedial education.
- Schools and colleges had drifted away from rigorous core courses in math, science, foreign language, English and history.
- SAT and ACT scores had been declining for twenty years, in part because of the wider spectrum of students wanting to go on to college than in the past.

In the 1980's, several prestigious groups published reports detailing the declining excellence of America's schools. Perhaps the most significant report was *A Nation At Risk*, that pointedly stated that our economic well-being was being eroded by a "rising tide of mediocrity" that was spilling over into the workplace.

It offered a long list of corrective actions, many quite controversial: 1) toughen standards for graduation, including more courses in math, science, foreign language, and computers; 2) lengthen school day and school year; 3) require more homework; 4) improve instructional material and train teachers in new teaching techniques; 5) raise teacher salaries based on teacher performance and create career ladders within teaching that distinguish among beginning, experienced and master teachers; 6) stiffen certification standards; and 7) require administrators to be held accountable for the success and failure of schools to educate their students.

By the end of the decade, some change had occurred, but young people were still a long way from being prepared for the demands of the 21st century workplace. Local level efforts in setting standards and assessing performance were piecemeal and uneven, often ignored or watered down. The gap between student mastery of academic skills and workplace skill demands continued to increase.

Establishing Goals and Setting Standards

In the 1990's, efforts shifted gears to involve state and federal governments and the business community in a more structured approach to educational reform. President Bush called the governors to a national education summit to set education goals for America's future. By the year 2000, they agreed, *all students* will start school ready to learn, and before graduating, display competency over challenging subject matter including English, mathematics, science, foreign language, civics and government, economics, the arts, history and geography. Furthermore they pledged that schools will be free of drugs, alcohol, and violence providing a disciplined environment conducive to learning. The President and governors set the target graduation rate at 90 percent and declared that the United States will be first in the world in mathematics and science achievement by the year 2000.

Soon after, the Department of Labor issued its SCANS (Secretary's Commission on Achieving Necessary Skills) Report that identified three sets of foundation skills and five sets of workplace competencies workers must master for effective job performance.

By the early 1990's, leading academic and professional authorities had begun to develop voluntary standards in their particular subject areas. In 1992, the Departments of Labor and Education began funding projects to encourage the development of industry-wide standards. These projects intend to ensure that

workers have the requisite skills needed to succeed in the workplace. Recent national legislation has furthered that initiative. The 1994 law entitled *Goals 2000: Educate America Act* called for a national system of *voluntary* industry-led skills standards. It established a National Skills Standards Board composed of 28 members representing business, labor, education, government, community and civil rights organizations to oversee the operation. That same law also provided money to states to help in the development of academic standards. Currently, 49 states have developed or are developing statewide academic standards; 46 have assessment programs in place and two are currently developing them.[7]

In 1994, President Clinton signed into law the *School-to-Work Opportunities Act*. It provides states with seed money and assistance to design and carry out programs that help all students graduate equipped with the new skills and knowledge for the jobs of a modern, competitive world economy. Its core elements include:

- School-based learning - classroom instruction based on rigorous academic standards and business defined standards.
- Work-based learning - career exploration, work experience, internships and apprenticeships.
- Connecting activities - courses integrating classroom and on-the-job instruction, matching students with participating employers and training mentors.

Finally in the spring of 1996, 40 governors and 49 corporate executives met to assess how far American education had come in meeting the goals established by President Bush and the governors in 1990. While they found that some progress had been made, clearly the nation would not meet those goals by the year 2000 unless the business community and the governors accelerated their efforts.

This they agreed to do. *Governors* committed themselves to establish, within two years, internationally competitive academic standards, assessment procedures to measure academic achievement, and accountability systems to improve student performance. They also pledged to reallocate funds necessary to implement this commitment.

Business leaders pledged that within one year they will require job applicants to prove academic achievement through transcripts, diplomas, and portfolios. They will also consider the quality of a state's academic standards and student achievement levels a high priority factor in making business location decisions. Finally, they committed themselves to developing and helping to set up inexpensive and easy-to-use technology products and services to support teaching.

Jointly, the governors and business leaders agreed to publish an annual report written by an external and independent nongovernmental group to measure each state's progress in setting standards, improving the quality of teaching, incorporating technology, supporting innovation and improving student achievement.

The world is changing rapidly, requiring new and more advanced academic skills than ever before. To ensure that all students are equipped to succeed in post-secondary education, training or in the workplace, parents, educators, and business leaders must work together to bridge the gap between school and the workplace.

Critical Components of Educational Reform

So what is the answer? How do we educate young people so that they not only survive but flourish in the 21st century? The following education reforms are essential:

- Developing challenging academic subject matter benchmarked by world-class standards that explicitly describe the skills and knowledge all students must master.
- Measuring student performance against world-class standards.
- Holding schools and students accountable for performance.
- Ensuring the skills and knowledge students learn in school are relevant to workplace success, thereby motivating students to excel.

World Class Standards

Academic standards are explicit statements that describe the skills and knowledge that all students must achieve and the level at which they must achieve them. Standards allow students to be recognized for achievement, rather than simply the amount of time spent in school. High academic standards ensure that all students strive to meet the same challenging goals, though methods of learning may differ.

High school graduates should not have to use trial-and-error learning to discover what is expected of them by employers and postsecondary education institutions. Academic standards should tell students what they must master to be ready for further learning, productive work, and lives as contributing citizens. Standards should be explicit about critical skill proficiency levels – they should include examples from pre-employment tests and interviews used by preferred employers, as well as criteria postsecondary institutions use to assess applicants for admission.

Assessing Student Performance

Standards are valuable only when they are measurable, when they provide information that helps improve achievement, and when they hold schools, teachers, adn students accountable for results. Even the most rigorous standards are meaningless without an assessment system that:

- provides data which students, educators, the business community, and the public can use to guide student learning; and
- offers concrete measures which can be used to reward or sanction performance.

Many issues arise in designing assessment instruments. Locally developed assessments have the benefit of being "custom fit" to locally-developed standards. The drawback is that it is often difficult to know whether these standards are rigorous enough or perhaps even too unrealistically high. In addition, assessment instruments themselves must be carefully constructed so that they are effective and not biased. Tests that assess student performance against state, national and international standards may measure certain cognitive skills, but not fully explore critical thinking skills or creativity.

The answer lies in a mixture of such tests which accounts for local interests and concerns, but also assesses performance against national and international standards. Only then will parents, schools, and the business community really know what level of skill a grade of "A" in algebra indicates.

Accountability

Assessment leads to accountability. High standards and student performance assessments must be complemented by actions to improve performance. This is why the *First In The World* consortium that twenty public school districts in Illinois have established with their local business partners is so significant. The consortium's objective is for all consortium students to have achieved world-class standards in mathematics and science as measured by comparative international tests by the year 2000. The districts are working with the US Department of Education, the North Central Regional Educational Laboratory, the National Academy of Science, and the National Alliance of Business to:

- Identify and define world class standards in math and science.
- Design and implement exemplary programs in math and science.
- Enter into school-business partnerships.
- Disseminate exemplary programs in math and science.

Clearly this is the direction toward which all schools must move in the coming years.

Making Learning Relevant

In the classroom, motivating students to learn is often the key to high achievement. Students frequently fail to understand how academic learning is applied or rewarded in the real world. Identifying the links between academic subjects and workplace skill requirements can make learning exciting and motivate students to achieve. Many students, including those for whom school is difficult or boring, could be well served by learning traditional subjects (English, algebra, biology) through practical applications. High academic standards ensure that all students strive to meet the same challenging goals, though their methods of learning may differ.

Learning . . .To Work in District 21

Learning . . .To Work is a bold and exciting three-year initiative designed to expose middle school students and their teachers to an education rich in both rigorous academic and practical work-related experiences. Up to now, middle schools have largely been forgotten, the neglected no-man's land of educational reform, half way between dramatic reform movements in elementary and high school.

But Lorraine Monroe, principal of Frederick Douglas Academy in New York City sees middle school students quite differently: ". . .children in the middle years are ripe for change; middle schoolers are curious, enthusiastic, indefatigable, and facile learners".[22] It is one of the most critical developmental stages in their lives when they are trying to figure out who they are and how they fit into the world around them. They become aware of careers, and begin to understand that work is not only an economic reality, but the road to independence and a source of self-identity. It is an exciting time when the world is bright and new and all things are possible.

Learning . . .To Work taps into that enthusiasm and energy and provides District 21 middle school students with unique opportunities to:

- Explore career options through in-class activities and business sponsored lessons in the workplace;
- Learn the skills and knowledge they'll need to excel in the 21st century.
- Cultivate an early respect for academic excellence and develop the self-confidence to master more advanced skills in high school.

District 21 has established strong linkages with the business community through partnerships with companies including: Hiedenhain, Motorola, Apple Computer, McDonald's, International Research Institute, SkyLight Publishing, Markham Circuit Court, Marriott Corporation Chicago, United Airlines, Kraft, OWP&P Architects, Sparkling Spring, Lutheran General Hospital, LaSalle National Bank, Palwaukee Municipal Airport, Le Francais Restaurant, Improv Olympics of Chicago, The Buffalo Grove Chamber of Commerce and Elenco Electronics, Inc. Each business is involved with three middle schools in activities such as:

- Offering structured work-based learning experiences for teachers over the summer.
- Providing staff with job shadowing and teacher-in-residence opportunities.
- Conducting tours of facilities.
- Teaching classes.

- Helping to develop school-based curricula.
- Delivering presentations about work to students.

Tom Higgins, Head of Community Relations at Lutheran General Hospital and participant in the *Learning...to Work* program, explains, "We need a hospital without walls and we need to reach out to the community. Schools also need to go beyond their four walls and reach out to the community."

Learning . . .To Work is not just for students. It is also a considerable staff development effort. Teachers spend time in the workplace gaining knowledge of the business world by observing work processes and talking with workers about school work issues. Through this interaction, each comes to better understand and respect the other. After spending several days at Lutheran General Hospital, Kathy Favazza, seventh grade teacher, is now better able to design math lessons around challenges employees face every day in the health care field.

Growing out of their work-based learning opportunities, teachers are developing dynamic, work-related curricula that integrate academic and practical work-based learning. "Problem-based Learning Units" is one of the types of instructional initiatives that is already making a mark in the classroom. One has received national recognition from the National Middle School Association. Another featured a mock trial thanks to the direct assistance of the Markham Circuit Court. A third set up a London House Cafe where students operated a catering service. They purchased and prepared food while also learning about marketing and accounting. During the 1997-1998 school year, it will welcome the expertise of three additional colleagues in home economics, technology, and art. Ryan Croke, an eighth grade student involved in the *Learning...to Work* project, says, "I found it helped a lot of people develop social skills working with people outside the school...It was a great opportunity for everyone to break the barrier of the school's walls."

Of particular note is District 21 participation in the President's Export Council's Virtual Trade Mission. The President's Export Council designed the simulation for use in high schools and colleges to introduce students to the complexity and importance of international trade. Since Ms. Feld, a District 21 teacher, worked with United Airlines in the design of the program, eighth grade students in her school have had the opportunity to participate in the simulation. Students watched videos on the importance of international trade produced by individual companies, and even countries, heard guest speakers-including an Olympic athlete, and used the internet for research. They also visited businesses and conducted surveys in their study.

Learning . . .To Work is a partnership that benefits everyone. Students benefit from:

- The opportunity to apply their knowledge to "real world" challenges, making learning relevant and exciting.
- An integrated curriculum approach to solving problems, demonstrating how subjects like math, science, and English relate to each other.
- Exposure to a variety of career types.
- The chance to develop role models mentors within the local business community.

Teachers benefit from:

- Enhanced knowledge of the ways in which the workplace is changing and new skills required to succeed.
- New relationships with business leaders, who can provide valuable feedback and input on curriculum and instruction.

Business leaders benefit from:

- A vehicle for articulating workplace skill requirements and working with educators to improve student achievement.
- A future workforce that possesses the skills necessary to succeed.

This is but the beginning! *Learning . . .To Work* and the *First In The World Consortium* are still maturing and expanding. Their ultimate success will be felt years from now when students have moved into adulthood, equipped to take on the 21st century and win.

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